

# Advanced Material Modeling Project

Game Changing Development Program | Space Technology Mission Directorate (STMD)



## ANTICIPATED BENEFITS

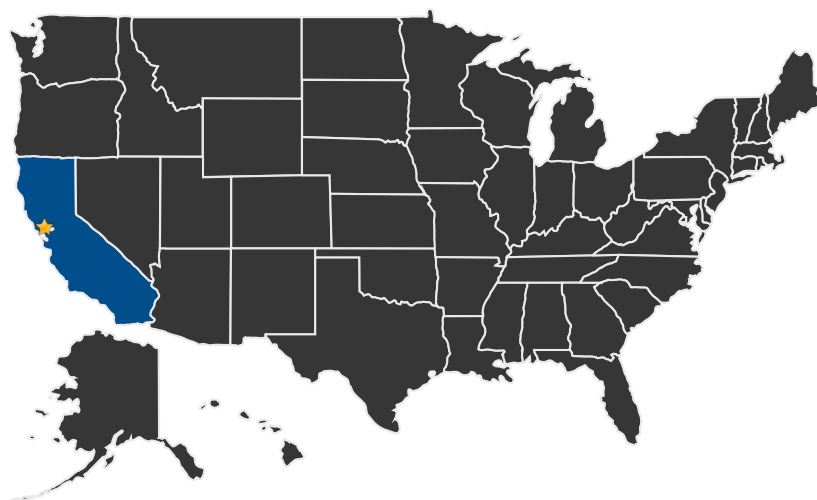
### To NASA funded missions:

Deliver high fidelity TPS response models with direct impact to MPCV and Mars 2020 TPS margin policy and system mass. Improve prediction of Mars entry environments and TPS response to facilitate instrumentation selection and placement and analysis of returned data for MEDLI-2.

## DETAILED DESCRIPTION

Building models that are based on fundamental understanding of the material behavior, coupling those models to the fluid dynamic behavior of the boundary layer, and validating the model with arc jet and flight data will enable optimized risk and margin recommendations for a whole generation of future NASA and commercial space missions.

## U.S. WORK LOCATIONS AND KEY PARTNERS



■ U.S. States  
With Work

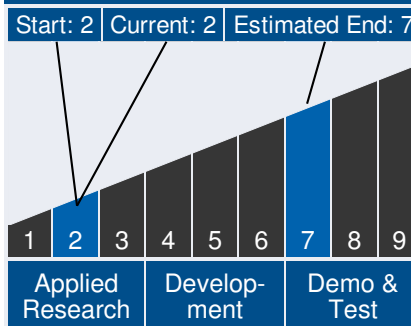
★ **Lead Center:**  
Ames Research Center



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## Technology Maturity



## Management Team

### Program Executive:

- Lanetra Tate

### Program Manager:

- Mary Wusk

### Project Manager:

- Michael Wright

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## Other Organizations Performing Work:

- AFOSR
- EADS-Astrium
- LBNL
- Montana State
- NASA EPSCOR Students
- Sandia National Laboratory
- VKI

## Technology Areas

### Primary Technology Area:

Entry, Descent, and Landing  
Systems (TA 9)

└ Vehicle Systems (TA 9.4)

└ Modeling and  
Simulation (TA 9.4.5)

### Secondary Technology Area:

Thermal Management  
Systems (TA 14)

└ Thermal Protection

Systems (TA 14.3)

└ Ascent/Entry TPS (TA  
14.3.1)

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## Technology Areas (cont.)

### Additional Technology Areas:

Entry, Descent, and Landing  
Systems (TA 9)

- └ Aeroassist and Atmospheric  
Entry (TA 9.1)

- └ Thermal Protection  
Systems for Rigid  
Decelerators (TA 9.1.1)

- └ Extreme Environment  
Ablative Thermal  
Protection System  
(TPS) (TA 9.1.1.1)

- └ High-Reliability  
Thermal Protection  
System (TPS) (TA  
9.1.1.2)

- └ Conformal Ablative  
Thermal Protection  
System (TPS) (TA  
9.1.1.3)

- └ Vehicle Systems (TA 9.4)

- └ Modeling and  
Simulation (TA 9.4.5)

- └ Multi-Disciplinary  
Coupled Analysis  
Tools (TA 9.4.5.1)

- └ Ablative Material  
Response Models (TA  
9.4.5.3)

## DETAILS FOR TECHNOLOGY 1

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